Physics

STUDY OF THE EARTH'S MAGNETOSPHERE USING THE POLAR SATELLITE

Erin R. Wetzel
Physics Department - Winona State University
P.O. Box 5838
Winona, MN 55987
Erwetzel5960@webmail.winona.edu
Dr. J. D. Perez*
Auburn University, Auburn Alabama
Dr. Richard Shields*
Winona State University, Winona Minnesota

This presentation will analyze the boundary crossings of the Earth's magnetopause and bow shock. NASA's Polar satellite data was studied in April of 2000 and 2001. Polar, launched in February of 1996, has an orbit that stays within the plasmasphere under normal conditions. When the interplanetary magnetic field, also known as the IMF, is increased the magnetopause and occasionally the bow shock are pushed inward allowing Polar's orbit to cross. Past research indicates these boundaries have dimension. The conditions within these boundaries will be discussed. We will look at magnetic fields using MFE, electron density and electron energy using HYDRA, ion content using TIMAS, high energy particles using CEPPAD, and the IMF using SWE on NASA's Wind satellite. This research is important in helping create more accurate models of the magnetosphere.